

CLAIMS:

Having thus described the preferred embodiments, the invention is now claimed to be:

1. A light source (10) comprising:
 - a light engine (16) for generating light of one of a plurality of wavelengths, the light engine (16) including:
 - a platform (14), and
 - 5 at least one LED (12) disposed on the platform (14);
 - an enclosure (22) surrounding a light generating area of the light engine (16);
 - a base (24) including a heat sink (26) for conducting thermal energy away from the at least one LED (12), into which heat sink (26) the light engine (16) is mounted;
 - 10 and
 - a conversion circuit (30) for supplying electric power to the light engine (16).
2. The light source as set forth in claim 1, further including:
 - 15 a luminescent converting element (44) to receive the light generated by the light engine (16) and convert at least some of the received light to visible light.
3. The light source as set forth in claim 2, further including:
 - 20 a light guide (36) disposed within the enclosure (22).
4. The light source as set forth in claim 3, wherein the luminescent converting element (44) is adjacent at the least one LED (12).
5. The light source as set forth in claim 4, wherein the light guide (36) provides an appearance of a filament.
 - 25
6. The light source as set forth in claim 4, wherein the light guide (36) comprises an optical fiber with one of internal diffusers, external diffusers, and other

frustrated TIR (Total Internal Reflection) features to allow the light to escape at preselected locations.

7. The light source as set forth in claim 3, wherein the light guide (36) 5 comprises a reflector.

8. The light source as set forth in claim 7, wherein the reflector is comprised of a reflective metal.

10 9. The light source as set forth in claim 3, wherein the luminescent converting element (44) is disposed on or within the light guide (36).

10. The light source as set forth in claim 2, wherein the luminescent converting element (44) is disposed on or in the enclosure (22).

15

11. The light source as set forth in claim 10, wherein the luminescent converting element (44) includes a transparent phosphor.

12. The light source as set forth in claim 11, wherein the transparent phosphor 20 comprises one of:

- an organic phosphor,
- an organic complex of a rare earth metal,
- a nanophosphor, and
- a quantum dot phosphor.

25

13. The light source as set forth in claim 10, further comprising:
one of an index matching material and a lensing material encompassing the at least one LED (12).

30 14. The light source as set forth in claim 1, wherein the base (24) is adapted for mating with the light engine (16).

15. The light source as set forth in claim 1, wherein the heat sink (26) comprises:

a slug (32) inserted into the base (24) for conducting the thermal energy from the at least one LED (12) to at least one of the base (24) and ambient air.

16. The light source as set forth in claim 15, wherein the slug (32) comprises:
5 a plurality of fins (34) disposed in one of a radial and a cylindrical tube longitudinal design about an outer periphery.

17. The light source as set forth in claim 1, wherein the heat sink (26) extends radially from the base (24) to conduct the thermal energy to ambient air.

10

18. The light source as set forth in claim 1, wherein the conversion circuit (30) comprises:

an AC to DC converter.

15

19. The light source as set forth in claim 1, wherein the platform (14) comprises one of:

a metal clad, FR4, and CEM-1 printed circuit board hosting the at least one LED.

20. The light source as set forth in claim 1, wherein the enclosure (22) comprises a substantially transparent enclosure of a variety of shapes

25 21. The light source as set forth in claim 20, wherein the enclosure (22) comprises a light diffusing coating.

22.

The light source as set forth in claim 1, further comprising:

an index matching fluid between the light engine (16) and the enclosure (22).

30

23. A modular adaptable LED lighting system (10) comprising:

a screw base module (24);

at least two light modules (16) having different light emission characteristics, each light module (16) including:

a platform (14) which is adapted for mating with the base module (24), and

at least one LED (12) disposed on the platform (14) for generating light in a range from ultraviolet to infrared wavelengths;
an enclosure (22), which surrounds the light produced by the light module (16) such that at least a portion of the light is transmitted through the enclosure (22); and
5 a power module (30) for energizing the at least one LED (12).